UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

This draft ecological site description is approved for field use and testing for a one-year period beginning MM, YYYY.
Additional information and comments on this site should be sent to the Utah State Range Management Specialist.

STATE: Utah
SITE TYPE: Rangeland
ECOLOGICAL SITE NAME: Semidesert Shallow Sandy Loam (Blackbrush)
SITE NUMBER: 035XY233UT
MLRA: D-35

Original Site Description: Author:	GSC	Date: 05/13/1983
Revised Site Description: Author:	GSC	Date: 10/20/1993
Revised Site Description: Author:	SM	Date: 03/23/2004
Approved by: Title:	Signed:	Date:

Ecological Site Definition - A distinctive kind of land, with specific physical characteristics, which differs from other kinds of land in its ability to produce a distinctive kind and amount of vegetation, and in its response to management.

A. PHYSICAL CHARACTERISTICS

1. SOILS

Depth: very shallow to shallow (4 to 20 inches)
Surface Textures: gravelly sandy loam, fine sandy loam, channery fine sandy loam, very gravelly loam, loamy sand, and fine sand
Surface Fragments (<=3" % cover, >3" % cover): 0 to 70%
Subsurface Textures: sandy loam, gravelly sandy loam, channery sandy loam, fine sandy loam, gravelly fine sandy loam, channery fine sandy loam, loam, parachannery loam, channery loam, gravelly clay loam, and loamy fine sand
Subsurface Fragments (<=3" % vol. >3" % vol.): 0 to 50%
Geologic Parent Materials: eolian, colluvium and residuum deposits derived mainly from sandstone (Geologic Formation – Straight Cliffs Formation, Drip Tank Member)
Moisture Regime: Ustic Aridic
Temperature Regime: mesic
Runoff: low to medium
Permeability (min-max): moderate to moderately rapid (0.6 to 6.0 in/hr)
Drainage Class (min-max): well drained
Water Erosion Hazard: moderate
Wind Erosion Hazard: slight to moderate
Electrical Conductivity (EC in mmhos/cm): 0 to 2 mmhos/cm (nonsaline)
Sodium Adsorption Ration (SAR): 0 (nonsodic)
Calcium Carbonate Equivalent (%): 1-5%
pH Range (1:1 water): 7.4 to 8.6
Available Water Capacity (inches): 0.5 to 2 inches

Soils are calcareous to the surface and have a layer of carbonate accumulation just above the sandstone bedrock. Average annual soil loss in potential is approximately 0.5-1.5 tons/acre.

Major Soils Associated With This Site *(Soil Survey Area + Series Name)*:

Grand Staircase Escalante NM (686): **Lazear – warm** in mapunit 5155.
Grand County – Central Part (624): **Pastern** in mapunit 15.
Canyonlands Area (633): **Lithic Ustic Torriorthents** in mapunit 48.
Henry Mountain Area (631): **Pastern** in mapunits 53 & 72; **Rizno** in mapunits 80, 81, 83, 92 & 108; **Wayneco** in mapunits 47, 117, 118 & 119.
San Juan County, Utah –Central Part (638): **Moenkopie** in mapunits 28, 29 & 59; **Pastern** in mapunits 27 & 39; **Rizno** in mapunits 1 & 21; **Skos** in mapunits 25, 35, 51, 62 & 65.
Glen Canyon NRA: **Pastern** in mapunits 123 & 150; **Rizno** in mapunits 158 & 159; **Skos** in mapunits 139, 161 & 182; **Travessilla – warm** in mapunit 177; **Wayneco** in mapunit 189.
Capitol Reef NP: Rizno in mapunit 152; Wayneco in mapunit 152.

Additional information may be found in Section II of the Field Office Technical Guide.

2. PHYSIOGRAPHIC FEATURES

Landform and Position: Mesas, structural benches and hillsides, dissected hillslopes on structural benches; mostly associated with Rock outcrops
Aspect: all

	Minimum	Maximum
Slope:	2%	30%
Elevation:	4,900 ft.	5,800 ft.
Flooding:	None	Rare
Frequency:		
Duration:		
Ponding:	None	Rare
Depth (inches):		
Frequency:		
Duration:		
Water Table Depth:		

B. CLIMATIC FEATURES

Mean Annual Precipitation (inches): 8 to 12 inches
Mean Annual Air Temperature: 45°F to 52°F
Mean Annual Soil Temperature: 47°F to 54°F
Frost Free Period (days): 120 to 160 days
Freeze Free Period (days): 120 to 160 days

Climate Stations: St. ID. : 422592 Location: Escalante, Utah Period: From: 5/1901 To: 7/2003

Temperature	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
High Mean	40.4	45.6	54.4	63.2	72.8	83.6	88.7	85.6	78.4	66.8	52.6	41.9	64.5
Average Mean	27.2	32.9	40.3	47.9	56.3	65.4	71.4	69.0	61.3	50.8	38.4	29.0	49.2
Low Mean	13.9	20.2	26.2	32.5	39.9	47.2	54.2	52.4	44.2	34.8	24.2	16.1	33.8

Precipitation	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Highest	4.44	3.06	3.46	3.30	2.50	2.50	5.41	4.50	5.70	5.57	4.65	3.76	21.70
Average Mean	0.95	0.79	0.84	0.57	0.60	0.47	1.20	1.83	1.16	1.06	0.65	0.80	10.91
Lowest	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	4.79

Climate Stations: St. ID. : 421168 Location: Canyonlands The Needle, Utah Period: From: 6/1965 To: 7/2003

Temperature	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
High Mean	40.9	49.0	58.8	67.4	78.2	89.2	95.2	92.5	83.4	69.7	54.0	42.4	68.4
Average Mean	28.6	35.8	44.4	51.9	62.0	72.1	78.5	76.5	66.8	53.7	40.4	30.1	53.4
Low Mean	16.3	22.7	30.1	36.6	45.8	55.1	61.9	60.3	50.3	37.8	26.9	17.8	38.5

Precipitation	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Highest	1.56	1.34	2.59	1.99	2.61	2.03	2.27	3.03	2.42	4.43	1.58	1.59	11.19
Average Mean	0.53	0.42	0.74	0.69	0.62	0.38	0.87	1.04	0.86	1.09	0.68	0.54	8.45
Lowest	0.0	0.0	0.01	0.0	0.0	0.0	0.05	0.0	0.0	0.01	0.0	0.0	4.25

(Includes factors such as storm intensity, precipitation dependability, origin and pattern of storms, driest and wettest months, orographic effects, etc.)

Approximately 70-75% occurs as rain from March through October. On the average, February, May, and June are the driest months and July through October are the wettest months. Precipitation is extremely variable from month to month and from year to year. Much of the summer precipitation

Influencing Water Features (if any):

Wetland Description (Cowardin System) System Subsystem Class
None

Stream Types (Rosgen System) System
None

C. PLANT COMMUNITY CHARACTERISTICS

1. Potential Plant Community Description and Ecological Factors

(Includes dominant vegetative aspect, cool-season and warm-season components, typical plant spacing, etc.)

The dominant aspect of the plant community is blackbrush. The composition by air-dry weight is approximately 15% perennial grasses, 5% forbs, and 80% shrubs. In average years, plants begin growth around March 1 and end growth around October 15.

2. Plant Community Composition by Weight and Percentage

Grasses and Grasslike, 15-20%

Common Name	National Symbol	Group	Pounds per Acre		% by Weight of Total Composition	
			Low	High	Low	High
Indian Ricegrass	ACHY	0	6	20	2	5
Galleta	PLJA	0	6	20	2	5
Bottlebrush Squirreltail	ELEL5	1	3	8	1	2
Desert Needlegrass	STSP3	1	3	8	1	2
Black Grama	BOER4	1	3	8	1	2
Sand Dropseed	SPCR	1	3	8	1	2
Blue Grama	BOGR2	1	3	8	1	2
Other Perennial Grasses	PPGG	1	9	20	3	5
Other Annual Grasses	AAGG	1	9	20	3	5

Forbs, 5-10%

Common Name	National Symbol	Group	Pounds per Acre		% by Weight of Total Composition	
			Low	High	Low	High
Shockley’s Buckwheat	ERSH	0	6	20	2	5
Gooseberryleaf Globemallow	SPGR2	0	3	12	1	3
Pacific Aster	SYCHC	2	0	4	0	1
Wright’s Bird’s beak	COWR2	2	0	4	0	1
Brenda Yellow Cryptantha	CRFL5	2	0	4	0	1
Canaigre Dock	RUHY	2	0	4	0	1
Horned Spurge	EUBR	2	0	4	0	1
Stemless Four-nerve Daisy	TEACA2	2	0	4	0	1
Dwarf Milkweed	ASMA10	2	0	4	0	1
Woolly Locoweed	ASMO7	2	0	4	0	1
Mountain Pepperweed	LEMO2	2	0	4	0	1
Other Perennial Forbs	PPFF	2	3	20	1	5
Other Annual Forbs	AAFF	2	3	20	1	5

Shrubs, 75-85%

Common Name	National Symbol	Group	Pounds per Acre		% by Weight of Total Composition	
			Low	High	Low	High
Blackbrush	CORA	0	195	300	65	75
Torrey's Mormontea	EPTO	0	15	40	5	10
Bigelow Sagebrush	ARBI3	0	9	20	3	5
Broom Snakeweed	GUSA2	3	3	8	1	2
Fourwing Saltbush	ATCA2	3	3	8	1	2
Mexican Cliffrose	PUME	3	3	8	1	2
Thompson's Smokebush	PSTH	3	3	8	1	2
Sulphur-flower Buckwheat	ERUM	3	3	8	1	2
Winterfat	KRLA2	3	3	8	1	2
Singleleaf Ash	FRAN2	3	3	8	1	2
Desert Pepperweed	LEFR2	3	3	8	1	2
Spiny Hopsage	GRSP	3	3	8	1	2
Roundleaf Buffaloberry	SHRO	3	3	8	1	2
Littleleaf Mountain Mahogany	CEIN7	3	3	8	1	2
Nevada Mormontea	EPNE	3	3	8	1	2
Narrowleaf Yucca	YUAN2	3	3	8	1	2
Shadscale	ATCO	3	3	8	1	2
Other Shrubs	SSSS	3	9	20	3	5

3. Plant Community Annual Production

At the highest potential similarity index, this site will produce approximately the following amount of air-dry herbage, expressed as pounds/acre:

	Low	High
Favorable Year	450	550
Average Year	300	400
Unfavorable Year	150	250

4. Ground Cover and Structure

a. Vegetative

Vegetation Type	Percent Canopy Cover	Height Range	Percent Basal Area Cover
Grasses & Grass-like (perennial)	10	0.5-2 ft.	5
Forbs (perennial)	5	0.5-1 ft.	2
Shrubs	60	1-2 ft.	20
Trees	-	-	-
Cryptogams	0-3	0.5-1.0 cm	0-3

b. Other

Litter	0-4%
Coarse Fragments	0-50%
Bare Ground	25-45%

5. Ecological Dynamics of the Site

(Includes a discussion of seral stages; fire influence and effects; effects of prolonged wet or dry periods; resistance to change; the influence of such things as grazing, rodent concentrations, insects, diseases, introduced species, and soil erosion or deposition; other stable vegetative states associated with this site as a result of extreme disturbance)

As ecological condition deteriorates due to overgrazing, Indian ricegrass and mormontea decrease while annuals forbs increase. Fire does not appear to be an important factor in this site. Cheatgrass is most likely to invade this site.

Suitability for rangeland seeding is very poor. The main limitations are low precipitation, low available water capacity and shallow soils.

Plant Communities & Transitional Pathways

(Show a steady state diagram with influences to move from one steady state to another)

6. Plant Growth Curves

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Percent Growth												
Name												
ID Number												
Description												

7. Similar Sites

(Give related range sites in MLRA's above and below)

8. Associated Sites Within MLRA

(Give site name and number)

Talus Slopes (Blackbrush – Shadscale)	035XY018UT
Desert Shallow Clay (Shadscale)	035XY125UT
Desert Shallow Sandy Loam (Shadscale)	035XY130UT
Semidesert Sand (Fourwing Saltbush)	035XY212UT
Semidesert Shallow Sand (Blackbrush)	035XY224UT
Semidesert Bouldery Fan (Blackbrush)	035XY203UT
Semidesert Sandy Loam (Fourwing Saltbush)	035XY215UT
Semidesert Sandy Loam (Spiny Hopsage)	035XY217UT
Semidesert Sandy Loam (Blackbrush)	035XY218UT
Semidesert Stony Loam (Blackbrush)	035XY243UT
Semidesert Shallow Sandy Loam (Utah Juniper-Pinyon)	035XY236UT
Semidesert Shallow Sandy Loam (Shadscale)	035XY230UT

9. Correlated Sites in Other States

(Give site name and number)

D. MAJOR USES OF THIS SITE

1. Livestock

a. Site Factors Influencing Management

The suitability for livestock grazing is fair. This site provides proper grazing for cattle and sheep during fall, winter, and spring.

b. Guide to Forage Quality (Plant preference by season)

Species – Cattle	Oct-Nov	Dec-Feb	Mar-May	Jun-Sep
Indian Ricegrass	F, G	VG	VG	VG
Galleta	VG	F, G	VG	VG
Shockley's Buckwheat	P	P	P	P
Gooseberryleaf Globemallow	F, G	P	F, G	F, G
Blackbrush	F, G	F, G	P	P
Torrey's Mormontea	F, G	F, G	P	P
Bigelow Sagebrush	F, G	P	P	P

Species – Sheep	Oct-Nov	Dec-Feb	Mar-May	Jun-Sep
Indian Ricegrass	F, G	VG	VG	VG
Galleta	F, G	F, G	VG	F, G
Shockley's Buckwheat	P	P	F	F
Gooseberryleaf Globemallow	F, G	P	VG	F, G
Blackbrush	F, G	F, G	P	P
Torrey's Mormontea	F, G	F, G	P	P
Bigelow Sagebrush	P	F, G	F, G	F, G

VG = Very Good G = Good F = Fair P = Poor

2. Wildlife

a. Site Factors Influencing Management

This site provides food and limited cover for wildlife.

b. List of Potential Species Present

Wildlife using this site includes coyote, bobcat, jackrabbit, snake, hawk, and mule deer.

This is a short list of the more common species found. Many other species are present as well and migratory birds are present at times.

c. Guide to Forage Preference of Managed Wildlife Species

Wildlife Species →	Mule deer		Elk	
Plant Species ↓	Use	Season	Use	Season
Indian Ricegrass	A	F, W, Sp, Su	A	F, W, Sp, Su
Galleta	B	F, W, Sp, Su	B	F, W, Sp, Su
Shockley's Buckwheat	C	F, W, Sp, Su	C	F, W, Sp, Su
Gooseberryleaf Globemallow	B	F, W, Sp, Su	B	F, W, Sp, Su
Blackbrush	B	F, W, Sp, Su	C	F, W, Sp, Su
Torrey's Mormontea	B	F, W, Sp, Su	C	F, W, Sp, Su
Bigelow Sagebrush	B	F, W, Sp, Su	C	F, W, Sp, Su

Use - A = preferred or desirable
B = some use, but less important
C = little use or used occasionally

Season - F = fall (Oct-Nov)
W = winter (Dec-Feb)
Sp. = spring (Mar-May)
Su. = summer (Jun-Sep)

3. Recreational Uses

Recreation activities include hiking and hunting.

4. Wood Products

None

5. Other Uses

The soil is in hydrologic group D. The hydrologic curve numbers are 80 to 90 depending on the condition of the watershed.

E. THREATENED AND ENDANGERED SPECIES

1. Plants – This section will be added as information is available.

2. Animals – This section will be added as information is available.

F. MODAL LOCATION AND DOCUMENTATION

State: County:
Latitude: Longitude:
Section: Township: Range:
General Legal Description:

Capitol Reef: **Rizno** & **Wayneco** modals are not in this site.
Grand Staircase: **Lazear, warm – NE** of Big Water, on Smoky Mountain, Burning Hills, Tibbet Bench, and Nipple Bench, on the southern edge of the Kaiparowits Plateau region. (Modal – not in this site)

Cedar Mesa

Field Office Site Location

Panguitch Field Office - Monticello Field Office – Richfield Field Office

Legal Description:

Data Collected and References

Sampling Source	Number of Records	Range Similarity Index			
		> 76%	51-75%	26-50%	0-25%
NRCS - ECS – 417					
UTAH - RANGE – 2					
Permanent Transect Location					

4. Other References

Attachment 1

Ecological Reference Worksheet

Author(s)/participant(s): V. Keith Wadman
Contact for lead author: _____ **Reference site used? Yes/No**
Date: 6/22/04 **MLRA:** 035X **Ecological Site:** Semidesert Shallow Sandy Loam (035XY233UT) Blackbrush, Galleta, Indian ricegrass) **This must be verified based on soils and climate (see Ecological Site Description). Current plant community *cannot* be used to identify the ecological site.**

Indicators **For each indicator, describe the potential for the site. Where possible, (1) use numbers, (2) include expected range of values for above- and below-average years for each community within the reference state, when appropriate & (3) cite data. Continue descriptions on separate sheet.**

1. **Number and extent of rills:** Minor rill development in exposed areas. Rills present should be short on flatter slopes but may become longer (4 to 8 feet) as slope steepens. They should be somewhat widely spaced (3 to 6 feet), and follow the surface micro-features. Old rills should be weathered and muted in appearance. An increase in rill formation may be seen after disturbance events such as recent fire or thunderstorms.

2. **Presence of water flow patterns:** Flow patterns wind around perennial plant bases and show minor evidence of erosion. They are somewhat short and stable and there is only minor evidence of deposition. Evidence of flow will increase somewhat with slope.

3. **Number and height of erosional pedestals or terracettes:** Plants may show minor pedestialing on their down slope side. Terracettes should be few and stable.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bareground):** 20 – 30%. (Surface typically has 35% rock cover).

5. **Number of gullies and erosion associated with gullies:** Few. Gullies should show only minor signs of active erosion and should be mostly stabilized with vegetation. Gullies may show slightly more indication of erosion as slope steepens.

6. **Extent of wind scoured, blowouts and/or depositional areas:** Little evidence of wind generated soil movement. Wind caused blowouts and deposition are not present.

7. **Amount of litter movement (describe size and distance expected to travel):** Some down slope redistribution caused by water. Some litter removal may occur in flow channels with deposition occurring at points of obstruction. Litter movement will increase with slope.

8. **Soil surface (top few mm) resistance to erosion (stability values are averages – most sites will show a range of values for both plant canopy and interspaces, if different):** 60 to 70% of this site should have an erosion rating of 4 or 5. 30 to 40% may have a rating of 2 to 4. The average should be a 4. Litter accumulation and cryptogamic crusts reduce erosion.

9. **Soil surface structure and SOM content (include type and strength of structure, and A-horizon color and thickness for both plant canopy and interspaces, if different):** Soil surface varies from 0 to 2 inch. Structure is medium platy. Color is light red (2.5YR6/6). Little difference in color under vegetation.

10. **Effect of plant community composition (relative proportion of different functional groups) & spatial distribution on infiltration & runoff:** When perennial grasses decrease, reducing ground cover and increasing bare ground, runoff will increase and infiltration will be reduced.

11. Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site): None. Bedrock occurs at approximately 8 inches.

12. Functional/Structural Groups (list in order of descending dominance by above-ground weight using symbols: », >, = to indicate much greater than, greater than, and equal to): Assumed fire cycle of 60-70+ years. Weakly-sprouting shrubs, perennial grasses > sprouting shrubs, annual forbs > invaders such as Cheatgrass & Halogeton. Dominants: Blackbrush, Indian ricegrass & Galleta; Sub-dominants: Torrey jointfir & Bigelow sagebrush. The weakly-sprouting shrub> rhizomatous grass functioning group is expected on this site.

13. Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence): All age classes of perennial grasses should be present. Slight decadence in the principle shrubs could occur near the end of the fire cycle.

14. Average percent litter cover (10-15%) and depth (.25-.50 inch).

15. Expected annual production (this is TOTAL above-ground production, not just forage production): 300 - 400 #/acre on an average year.

16. Potential invasive (including noxious) species (native and non-native). List species which characterize degraded states and which, after a threshold is crossed, "can, and often do, continue to increase regardless of the management of the site and may eventually dominate the site": Cheatgrass, Snakeweed, Halogeton & Annual forbs.

17. Perennial plant reproductive capability: All perennial plants should have the ability to reproduce in all years, except in extreme drought years.